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Proteases in Biological Control and Biotechnology

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Editors

Dennis D. Cunningham

Department of Microbiology and Molecular Genetics
College of Medicine, University of California
Irvine, California

George L. Long

Department of Biochemistry
University of Vermont
Burlington, Vermont

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Address all Inquiries to the Publisher
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**Proteases in
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The table of contents does not necessarily follow the pattern of the plenary sessions. Instead, it reflects the thrust of the meeting as it evolved from the combination of plenary sessions, poster sessions, and workshops, culminating in the final collection of invited papers, submitted papers, and workshop summaries. The order in which articles appear in this volume does not follow the order of citation in the table of contents. Many of the articles in this volume were published in the *Journal of Cellular Biochemistry*, and they are reprinted here. These articles appear in the order in which they were accepted for publication and then published in the *Journal*. They are followed by papers which were submitted solely for publication in the proceedings.

Contributors

Joffre B. Baker, Department of Biochemistry, University of Kansas, Lawrence, KS 66045 [83]

R. Keith Baker, Department of Biochemistry, Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, NC 27103 [75]

Rachel Bar-Shavit, Department of Pathology, Washington University School of Medicine, St. Louis, MO 63110 [89]

Gian Paolo Bentivoglio, Department of Biochemistry, Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, NC 27103 [75]

Francesco Blasi, International Institute of Genetics and Biophysics, CNR, 80125 Naples, Italy [61]

Joanne Blondin, USDA Human Nutrition Research Center on Aging at Tufts University, Boston, MA 02111 [283]

Peter C. Bohni, Department of Biochemistry, University of California, Berkeley, CA 94720 [255]

Ralph A. Bradshaw, Department of Biological Chemistry, College of Medicine, University of California, Irvine, CA 92717 [147]

Joze Brzin, J. Stefan Institute, Department of Biochemistry, 61111 Ljubljana, Yugoslavia [45]

Corinne H. Campbell, Department of Microbiology and Molecular Genetics, College of Medicine, University of California, Irvine, CA 92717 [109]

Darrell H. Carney, Department of Human Biological Chemistry and Genetics, Division of Biochemistry, The University of Texas Medical Branch, Galveston, TX 77550 [277]

Robin W. Carrell, Department of Hematological Medicine, University of Cambridge School of Medicine, Cambridge CB2 2QL, England [315]

Aaron Ciechanover, Unit of Biochemistry, Faculty of Medicine, Technion-Israel Institute of Technology, Haifa 31096, Israel [197]

Désiré Collen, Center for Thrombosis and Vascular Research, University of Leuven, B-3000 Leuven, Belgium; and Departments of Biochemistry and Medicine, University of Vermont, Burlington, VT 05405 [159,315]

P.C. Comp, Thrombosis/Hematology Research Program, Oklahoma Medical Research Foundation, Oklahoma City, OK 73104 [229]

Charles S. Craik, Departments of Pharmaceutical Chemistry and Biochemistry and Biophysics, University of California, San Francisco, CA 94143 [183]

M. Vittoria Cubellis, International Institute of Genetics and Biophysics, CNR, 80125 Naples, Italy [61]

Dennis D. Cunningham, Department of Microbiology and Molecular Genetics, College of Medicine, University of California, Irvine, CA 92717 [xvii,109]

Thomas K. Curry, Department of Biochemistry, University of Kansas, Lawrence, KS 66045 [83]

Patricia Gillis Dewalt, Department of Microbiology and Molecular Genetics, College of Medicine, University of California, Irvine, CA 92717 [121]

Joan C. Dunbar, Department of Biological Chemistry, College of Medicine, University of California, Irvine, CA 92717 [147]

The number in brackets is the opening page number of the contributor's article.

Timothy Edmunds, Department of Physiology and Biophysics, Harvard Medical School, Boston, MA 02115 [69]

C.T. Esmon, Thrombosis/Hematology Research Program, Oklahoma Medical Research Foundation, Oklahoma City, OK 73104 [229]

N.L. Esmon, Thrombosis/Hematology Research Program, Oklahoma Medical Research Foundation, Oklahoma City, OK 73104 [229]

David H. Farrell, Department of Microbiology and Molecular Genetics, College of Medicine, University of California, Irvine, CA 92717 [109]

Robert Fletterick, Department of Biochemistry and Biophysics, University of California, San Francisco, CA 94143 [183]

Alfred L. Goldberg, Department of Physiology and Biophysics, Harvard Medical School, Boston, MA 02115 [69]

Robert D. Gray, Departments of Biochemistry and Chemistry, University of Louisville, Louisville, KY 40292 [37]

Robert S. Gronke, Department of Biochemistry, University of Kansas, Lawrence, KS 66045 [83]

K.W. Harris, Thrombosis/Hematology Research Program, Oklahoma Medical Research Foundation, Oklahoma City, OK 73104 [229]

W.E. Holmes, Center for Thrombosis and Vascular Research, University of Leuven, Belgium [311]

Paul J. Isackson, Department of Biological Chemistry, College of Medicine, University of California, Irvine, CA 92717 [147]

Lucy Ivanoff, Central Research and Development Department, E.I. du Pont de Nemours and Company, Experimental Station, Wilmington, DE 19898 [45]

Jessica H. Jahngen, USDA Human Nutrition Research Center on Aging at Tufts University, Boston, MA 02111 [283]

Edwin G.E. Jahngen, Jr., Chemistry Department, University of Lowell, Lowell, MA 01854 [283]

Victoria H. Johnson, Department of Microbiology and Molecular Genetics, College of Medicine, University of California, Irvine, CA 92717 [121]

Deanna L. Justice, Departments of Pathology and Biochemistry, School of Medicine and Comprehensive Cancer Center, University of Southern California, Los Angeles, CA 90033 [217]

Arnold J. Kahn, The Pediatric Research Institute, St. Louis University School of Medicine, St. Louis, MO 63110 [89]

Daniel J. Knauer, Department of Developmental and Cell Biology, University of California, Irvine, CA 92717 [311]

Bruce D. Korant, Central Research and Development Department, E.I. du Pont de Nemours and Company, Experimental Station, Wilmington, DE 19898 [45]

Günther Kreil, Institute for Molecular Biology, Austrian Academy of Sciences, A 5020 Salzburg, Austria [265]

Lawrence F. Kress, Department of Experimental Biology, Roswell Park Memorial Institute, Buffalo, NY 14263 [17]

Sriram Krishnaswamy, Departments of Biochemistry and Medicine, University of Vermont College of Medicine, Burlington, VT 05405 [235]

Daniel Lawrence, Scripps Clinic and Research Foundation, La Jolla, CA 92037 [101]

Brigita Lenarcic, J. Stefan Institute, Department of Biochemistry, 61111 Ljubljana, Yugoslavia [45]

Iris Lindberg, Department of Biochemistry and Molecular Biology, Louisiana State University Medical Center, New Orleans, LA 70112 [269]

Mark O. Lively, Department of Biochemistry, Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, NC 27103 [75]

George L. Long, Division of Molecular and Cell Biology, Lilly Research Laboratories, Indianapolis, IN 46285; present address: Department of Biochemistry, University of Vermont, Burlington, VT 05405[xvii,169]

David J. Loskutoff, Scripps Clinic and Research Foundation, La Jolla, CA 92037 [101]

Marcy E. MacDonald, Department of Molecular Biology, Central Laboratory of the Netherlands Red Cross Blood Transfusion Service, 1006 AK Amsterdam, The Netherlands [51]

Kenneth G. Mann, Departments of Biochemistry and Medicine, University of Vermont College of Medicine, Burlington, VT 05405 [89, 235]

Nancy R. Matheson, Department of Biochemistry, University of Georgia, Athens, GA 30602 [307]

M. Matteo, Boehringer Ingelheim Pharmaceuticals, Ridgefield, CT 06877 [311]

Robert B. Miller, Departments of Biochemistry and Chemistry, University of Louisville, Louisville, KY 40292 [37]

Christa Mollay, Institute for Molecular Biology, Austrian Academy of Sciences, A 5020 Salzburg, Austria [265]

Hideki Nagase, Departments of Medicine and Biochemistry, UMDNJ-Rutgers Medical School, Piscataway, NJ 08854 [311]

P.P. Nawroth, Thrombosis/Hematology Research Program, Oklahoma Medical Research Foundation, Oklahoma City, OK 73104 [229]

Michael E. Nesheim, Biochemistry Department, Queen's University, Kingston, Ontario, Canada K7L 3N6 [235]

Hans Neurath, Department of Biochemistry, University of Washington, Seattle, WA 98195 [1]

Tor Ny, Scripps Clinic and Research Foundation, La Jolla, CA 92037 [101]

Bruce H. Odegaard, Departments of Biochemistry and Medicine, University of Vermont College of Medicine, Burlington, VT 05405 [235]

Ann C. Palmenberg, Biophysics Laboratory of the Graduate School, and Biochemistry Department of the College of Agriculture and Life Sciences, University of Wisconsin, Madison, WI 53706 [175]

Hans Pannekoek, Department of Molecular Biology, Central Laboratory of the Netherlands Red Cross Blood Transfusion Service, 1006 AK Amsterdam, The Netherlands [51]

Steven Petteway, Jr., Central Research and Development Department, E.I. du Pont de Nemours and Company, Experimental Station, Wilmington, DE 19898 [45]

Roy H. Rhodes, Departments of Pathology and Biochemistry, School of Medicine and Comprehensive Cancer Center, University of Southern California, Los Angeles, CA 90033 [217]

Steven Rocznik, The Hormone Research Institute, University of California, San Francisco, CA 94143 [183]

William Rutter, Department of Biochemistry and Biophysics, and The Hormone Research Institute, University of California, San Francisco, CA 94143 [183]

Guy S. Salvesen, Department of Biochemistry, University of Georgia, Athens, GA 30602 [307]

Michael Sawdey, Scripps Clinic and Research Foundation, La Jolla, CA 92037 [101]

Irene Schauer, Department of Biochemistry, University of California, Berkeley, CA 94720; present address: Department of Molecular, Cellular and Developmental Biology, University of Colorado, Boulder, CO 80309 [255]

Randy Schekman, Department of Biochemistry, University of California, Berkeley, CA 94720 [255]

Bert L. Semler, Department of Microbiology and Molecular Genetics, College of Medicine, University of California, Irvine, CA 92717 [121]

Charles D. Smith, Laboratory of Immune Effector Function, Howard Hughes Medical Institute, and Division of Rheumatology and Immunology, Department of Medicine, Duke University Medical Center, Durham, NC 27710 [25]

Ralph Snyderman, Laboratory of Immune Effector Function, Howard Hughes Medical Institute, and Division of Rheumatology and Immunology, Department of Medicine, Duke University Medical Center, Durham, NC 27710 [25]

Arno F. Spatola, Departments of Biochemistry and Chemistry, University of Louisville, Louisville, KY 40292 [37]

Stephen Sprang, Department of Biochemistry and Biophysics, University of California, San Francisco, CA 94143 [183]

D.M. Stern, Thrombosis/Hematology Research Program, Oklahoma Medical Research Foundation, Oklahoma City, OK 73104 [229]

Stuart Stone, Frederick Miescher Institute, CH-4002 Basel, Switzerland [311]

M. Patrizia Stoppelli, International Institute of Genetics and Biophysics, CNR, 80125 Naples, Italy [61]

Jordan Tang, Laboratory of Protein Studies, Oklahoma Medical Research Foundation and The Department of Biochemistry and Molecular Biology, University of Oklahoma Health Sciences Center, Oklahoma City, OK 73104 [135]

Allen Taylor, USDA Human Nutrition Research Center on Aging at Tufts University, Boston, MA 02111 [283]

P. Tekamp-Olson, Chiron Corporation, Emeryville, CA 94608 [255]

Zoltán A. Tökés, Departments of Pathology and Biochemistry, School of Medicine and Comprehensive Cancer Center, University of Southern California, Los Angeles, CA 90033 [217]

Takae Towatari, Central Research and Development Department, E.I. du Pont de Nemours and Company, Experimental Station, Wilmington, DE 19898 [45]

Paula B. Tracy, Departments of Biochemistry and Medicine, University of Vermont College of Medicine, Burlington, VT 05405 [235, 249]

James Travis, Department of Biochemistry, University of Georgia, Athens, GA 30602 [307, 311]

Vito Turk, J. Stefan Institute, Department of Biochemistry, 61111 Ljubljana, Yugoslavia [45]

Jan A. van Mourik, Department of Blood Coagulation, Central Laboratory of the Netherlands Red Cross Blood Transfusion Service, 1006 AK Amsterdam, The Netherlands [51]

William E. Van Nostrand, Department of Microbiology and Molecular Genetics, College of Medicine, University of California, Irvine, CA 92717 [109]

Anton-Jan van Zonneveld, Department of Molecular Biology, Central Laboratory of the Netherlands Red Cross Blood Transfusion Service, 1006 AK Amsterdam, The Netherlands [51]

Harry Veerman, Department of Molecular Biology, Central Laboratory of the Netherlands Red Cross Blood Transfusion Service, 1006 AK Amsterdam, The Netherlands [51]

Margrith W. Verghese, Laboratory of Immune Effector Function, Howard Hughes Medical Institute, and Division of Rheumatology and Immunology, Department of Medicine, Duke University Medical Center, Durham, NC 27710 [25]

Zena Werb, Laboratory of Radiobiology and Environmental Health, University of California, San Francisco, CA 94143 [303]

George D. Wilner, Departments of Pathology and Medicine, Washington University School of Medicine, St. Louis, MO 63110 [89]

Ricky N.S. Wong, Laboratory of Protein Studies, Oklahoma Medical Research Foundation and The Department of Biochemistry and Molecular Biology, University of Oklahoma Health Sciences Center, Oklahoma City, OK 73104 [135]

Mary Frances Ypma-Wong, Department of Microbiology and Molecular Genetics, College of Medicine, University of California, Irvine, CA 92717 [121]

Shiu Y. Yu, St. Louis VA Medical Center and St. Louis School of Medicine, St. Louis, MO 63125 [311]

Robert J. Ziccardi, Department of Immunology, Scripps Clinic and Research Foundation, La Jolla, CA 92037 [295]

Preface

This volume consists of the Proceedings of a conference held in Park City, Utah, from February 9th to 15th, 1986. The meeting was prompted by the realization that proteolytic enzymes play key roles in many diverse biological control systems and diseases, and by the conviction that unifying concepts and questions would emerge from discussions on how proteases bring about this regulation. An additional impetus for this meeting came from the remarkable strides recently reported in the molecular biology and genetic engineering of proteases. These developments have made it possible to employ new approaches in understanding the functions of proteases, the mechanisms by which they control biological processes, and the alterations involved in certain pathological states.

A fundamental goal of this meeting was to bring together two groups of scientists. One is comprised of investigators who explore the role of proteases in biological control systems and diseases. The other is made up of scientists who use the powerful approaches of molecular biology to probe the structures and evolution of proteases and to engineer new proteases and protease inhibitors. Of course, interactions between these groups have already led to remarkable breakthroughs, and the realization of this prompted us to emphasize these interdisciplinary approaches throughout the meeting. We hoped to stimulate discussions at several levels ranging from basic biology and biochemistry to clinical applications and biotechnology.

The organization of this volume roughly reflects the organization of the meeting, with the hope that the excitement of the sessions will be recalled by readers who were in attendance, and that some of it will be conveyed to readers who could not attend. Following the keynote address on the versatility of proteolytic enzymes is a collection of papers dealing with the intricate proteolytic control mechanisms in hemostasis and how knowledge of these mechanisms has been applied to thrombolytic therapy. The next section deals with the evolution of proteolytic enzymes and their genes, followed by a section on the role of limited proteolytic processing in several biological control processes. The collection of papers on cellular interactions is based on the realization that proteases control a number of key cellular activities; thus, it has been important to understand how the proteases and their inhibitors interact with cells. The section on degradation deals mostly with intracellular turnover of proteins, but at the same time sets the stage for the next section on diseases that result from altered controls on proteolysis. Fundamental to many of these processes is the control of proteases by specific inhibitors; this is the topic of the next section of the volume. This is followed by a section on engineered proteases. The use of recombinant DNA technology is found in many of the contributions throughout the volume.

We are very grateful to Robin Yeaton, who provided much assistance in the organization of this meeting. She offered excellent advice and kept track of many important details. We also thank Lisa Yeaton for expert assistance in the handling and editing of the manuscripts.

**Dennis D. Cunningham
George L. Long**

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